



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,851	07/25/2003	William J. Usab JR.	1100.8	2643
25099	7590	09/30/2005	EXAMINER	
DAVID M QUINLAN, PC 32 NASSAU STREET SUITE 300 PRINCETON, NJ 08542			VERDIER, CHRISTOPHER M	
			ART UNIT	PAPER NUMBER
			3745	

DATE MAILED: 09/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

e

Office Action Summary

Application No.

10/627,851

Applicant(s)

USAB ET AL.

Examiner

Christopher Verdier

Art Unit

3745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 5 and 11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 6-10, 12-20 is/are rejected.
- 7) ☒ Claim(s) 3 and 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 June 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>11-5-03, 6-3-04</u> . | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 3745

Receipt and entry of Applicants' Preliminary Amendments dated November 5, 2003 and July 14, 2005 are acknowledged.

Election/Restrictions

Applicant's election without traverse of group I, figures 2-4 and 6-7 in the reply filed on July 14, 2005 is acknowledged.

Claims 5 and 11 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the second axial flow impeller with plural impeller blades arranged around the hub, and upstream of the first impeller (claim 4), the device including a second plurality of lifting elements having an airfoil cross section arranged in a second cascade around the hub (claim 6; note that in figures 2-4 and 6-7, the second plurality of lifting elements 26 are not arranged around the hub 34), each airfoil in the second cascade having a circumferentially varying airfoil configuration (claim 6), each airfoil in the second cascade having a circumferentially varying distance between adjacent lifting elements (claim 6), the second cascade including at least one of a stator with plural stationary blades and a second axial flow impeller having plural impeller blades (claim 7), the axial flow impeller being a propeller (claims 8-9), the propeller blades being skewed (claim 10), the axial flow impeller

Art Unit: 3745

being a compressor of a gas turbine (claim 12), the axial flow impeller being a turbine of a gas turbine (claim 12), the device including plural stages that each include the first and second cascades (claim 13), and the device including a second plurality of lifting elements having an airfoil cross section arranged in a second cascade around the hub (claim 14) must shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Art Unit: 3745

Specification

The abstract of the disclosure is objected to because it contains the phrases “the invention” (line 7) and “The invention” (line 12) which are implied and should be deleted, and because in line 10, the legal term “said” should be deleted. Correction is required. See MPEP § 608.01(b).

The disclosure is objected to because of the following informalities: Appropriate correction is required.

On page 1, line 1, “TITLE” is superfluous and should be deleted.

In paragraph 6, line 9, “staring” is unclear.

In paragraph 19, line 4, “O(1)” is unclear.

In paragraph 54, lines 11 and 13, “O(1)” is unclear.

In paragraph 55, line 6, “O(1)” is unclear.

In paragraph 60, lines 4 and 5, “152” should be changed to -- 153 --.

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

Claim 7, lines 5-8, which recite that the second cascade includes at least one of a stator with plural stationary blades and a second axial flow impeller having plural impeller blades, has no antecedent basis for the underlined term in the specification.

Examiner's Suggestions to Claim Language

The following are suggestions to improve the clarity and precision of the claims:

In claim 1, line 3, -- first -- may be inserted before "cascade".

In claim 2, line 1, "an" may be changed to -- a first --.

In claim 4, line 2, "first-mentioned" may be changed to -- first --.

In claim 7, line 2, "first-mentioned" may be changed to -- first --.

In claim 7, line 7, "first-mentioned" may be changed to -- first --.

In claim 7, line 9, "first-mentioned" may be changed to -- first --.

In claim 8, line 2, "first-mentioned" may be changed to -- first --.

In claim 8, last line, "first-mentioned" may be changed to -- first --.

Claim Objections

Claims 13-14 are objected to because of the following informalities: Appropriate correction is required.

In claim 13, line 8, "said" (first occurrence) should be changed to -- an --.

In claim 14, line 3, "said" should be changed to -- a --.

In claim 14, line 6, -- of -- should be inserted after "property".

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6-10, 12-13, and 17-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 6, line 1, "further comprising an axial flow device" is unclear if this is meant to be an additional axial device to the device recited in claim 1, line 5, or if this is meant to refer to the device recited in claim 1, line 5. In claim 6, line 3, "said device" is unclear if this is meant to refer to the axial flow device, or the device recited in claim 1, line 5. In claim 7, lines 1-2, "said lifting elements" is unclear if this refers to the lifting elements of the first cascade, the lifting elements of the second cascade, or the lifting elements of both the first and second cascades. In claim 7, line 3, "around a hub" is unclear if this refers to the hub in claim 6, line 2, or a different hub. In claim 7, last line, "each said lifting element" is unclear if this refers to the lifting elements of the first cascade, the lifting elements of the second cascade, or the lifting elements of both the first and second cascades. In claim 12, line 2, "said axial flow impeller" lacks antecedent basis in claim 6, from which it depends. In claim 12, last line, "said lifting element" is unclear if this refers to the lifting elements of the first cascade, the lifting elements of the second cascade, or the lifting elements of both the first and second cascades. In claim 13, line 5, "around a hub" is unclear if this refers to the hub in claim 6, line 2, or a different hub. In claim 13, last line, "thereof" is unclear which element this refers to. In claim 17, line 4, "O(1)" is unclear, because the specification and the claim do not define this term, and it does not appear to be a numerical value of the recited range. In claim 18, line 5, "said blades" is unclear if this refers to the stator blades or the impeller blades. In claim 20, line 2, "O(1)" is unclear for the reasons set forth above.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by United Kingdom Patent 2,032,048 (figure 2). Note the apparatus for changing the pressure of a fluid flow, the apparatus comprising a plurality of lifting elements 14 spaced from each other in a cascade, each lifting element having an airfoil cross-section that provides lift as fluid travels relative thereto, and a device for directing the fluid into an inlet of the cascade (the lifting elements are used in turbomachines such as turbines or compressor, which inherently have a casing or flow guide that functions to direct fluid into the inlet of the cascade; therefore the casing or flow guide is considered as the device for directing the fluid into the inlet of the cascade), wherein the cascade varies a parameter of the flow (the state of separation and reattachment that the boundary layer is in, as well as the velocity of the boundary layer) relative to each lifting element in repeating cycles to cause the flow relative to each lifting element to begin to separate from the lifting element and then reattach thereto during each cycle, because the lifting elements are attached to an impeller, and the rotation of the impeller in combination with the steps 1 and 2 provides the cyclical separation and reattachment. See page 2, lines 38-42. The cascade comprises an axial flow impeller and the lifting elements comprise plural impeller blades arranged around a hub 18 capable of rotating on an axis. Also disclosed is an inherent

Art Unit: 3745

method of controlling the pressure of the fluid flow, the method comprising the steps of providing the plurality of lifting elements 14 spaced from each other in the cascade, each lifting element having an airfoil cross-section that provides lift as fluid travels relative thereto, directing the fluid into the inlet of the cascade, and varying the parameter of the flow relative to each lifting element in repeating cycles to cause the flow relative to each lifting element to begin to separate from the lifting element and then reattach thereto during each cycle.

Claims 1-2 and 15-16 are rejected under 35 U.S.C. 102(b) as being anticipated by the article "Wing Rotation and the Aerodynamic Basis of Insect Flight". See figures 1A and 1B, and the abstract. Note the apparatus for changing the pressure of a fluid flow, the apparatus comprising a plurality of lifting elements (the model wings in figure 1A) spaced from each other in a cascade, each lifting element having an airfoil cross-section that provides lift as fluid travels relative thereto, and a device for directing the fluid into an inlet of the cascade (the tank of mineral oil in figure 1A), wherein the cascade varies a parameter of the flow (the state of separation and reattachment that the boundary layer is in, as well as the velocity of the boundary layer) relative to each lifting element in repeating cycles to cause the flow relative to each lifting element to begin to separate from the lifting element and then reattach thereto during each cycle. The cascade comprises an axial flow impeller and the lifting elements comprise plural impeller blades arranged around a hub formed by the gearboxes in figure 1B capable of rotating on an axis. Also disclosed is an inherent method of controlling the pressure of the fluid flow, the method comprising the steps of providing the plurality of lifting elements (either the model wings in figure 1A or the actual insect wings) spaced from each other in the cascade, each lifting

Art Unit: 3745

element having an airfoil cross-section that provides lift as fluid travels relative thereto, directing the fluid into an inlet of the cascade (the cascade of insect wings themselves inherently have an inlet, or the tank of mineral oil may be considered as an inlet of the cascade), and varying the parameter of the flow relative to each lifting element in repeating cycles to cause the flow relative to each lifting element to begin to separate from the lifting element and then reattach thereto during each cycle. Concerning claim 16, the insect flies in air, which has gusts, which inherently varies the magnitude of the velocity of the flow entering the inlet of the cascade, the direction of velocity of the flow entering the inlet of the cascade, and swirl in the flow entering the inlet of the cascade.

Claims 1-2 and 15 are also rejected under 35 U.S.C. 102(a) as being anticipated by the article "A Biomimetic Propulsor for Active Noise Control: Experiments". See page 1, the last paragraph which bridges onto page 2, and figure 2. Note the apparatus for changing the pressure of a fluid flow, the apparatus comprising a plurality of lifting elements (the blades in figure 2) spaced from each other in a cascade, each lifting element having an airfoil cross-section that provides lift as fluid travels relative thereto, and a device for directing the fluid into an inlet of the cascade (the water filled box in figure 2c, or the inherent inlet that the impeller itself has), wherein the cascade varies a parameter of the flow (the state of separation and reattachment that the boundary layer is in, as well as the velocity of the boundary layer) relative to each lifting element in repeating cycles to cause the flow relative to each lifting element to begin to separate from the lifting element and then reattach thereto during each cycle. The cascade comprises an axial flow impeller and the lifting elements comprise plural impeller blades arranged around an

Art Unit: 3745

unnumbered hub in figure 2c capable of rotating on an axis. Also disclosed is an inherent method of controlling the pressure of the fluid flow, the method comprising the steps of providing the plurality of lifting elements spaced from each other in the cascade, each lifting element having an airfoil cross-section that provides lift as fluid travels relative thereto, directing the fluid into an inlet of the cascade (the water filled box in figure 2), and varying the parameter of the flow relative to each lifting element in repeating cycles to cause the flow relative to each lifting element to begin to separate from the lifting element and then reattach thereto during each cycle.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 6 and 13, as far as they are definite and understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over United Kingdom Patent 2,032,048 in view of Seymour 3,169,747. The United Kingdom Patent (figure 2) discloses an apparatus for changing the pressure of a fluid flow substantially as claimed as set forth above, including the lifting elements arranged around the hub 18 capable of rotating on an axis and forming a first cascade in the form of an axial flow impeller, but does not disclose a second plurality of lifting elements having an airfoil shaped cross section arranged in a second cascade around the hub, with each airfoil in the second cascade having a predetermined geometric property that varies circumferentially around the second cascade, with the property including at least one of the lifting element turning angle, the airfoil configuration, and distance between adjacent lifting elements (claim 6), and does not disclose that the device includes plural stages, each stage including the first and second cascade, such that the second cascade includes a stator with plural stationary lifting elements arranged around the axis, and such that flow exiting the outlet of the axial flow impeller of one stage is directed to the stator of a stage downstream thereof (claim 13).

Seymour (figure 1-2) shows a compressor of a gas turbine engine having lifting elements (R1-R6) arranged around a hub 33 capable of rotating on an axis and forming a first cascade in the form of an axial flow impeller, with a second plurality of lifting elements (S1-S6) having an airfoil shaped cross section arranged in a second cascade around the hub, with each airfoil in the second cascade having a predetermined geometric property in the form of the turning angle, the airfoil shape, or the spacing between adjacent lifting elements that varies circumferentially

Art Unit: 3745

around the second cascade, with plural stages, each stage including the first and second cascade, such that the second cascade includes a stator with plural stationary lifting elements arranged around the axis, and such that flow exiting the outlet of the axial flow impeller of one stage is directed to the stator of a stage downstream thereof, for the purposes of reducing blade vibration and increasing power.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the apparatus of United Kingdom Patent 2,032,048 such that it includes a second plurality of lifting elements having an airfoil shaped cross section arranged in a second cascade around the hub, with each airfoil in the second cascade having a predetermined geometric property that varies circumferentially around the second cascade, with the property including the lifting element turning angle, the airfoil configuration, or the distance between adjacent lifting elements, and such that the device includes plural stages, each stage including the first and second cascade, such that the second cascade includes a stator with plural stationary lifting elements arranged around the axis, and such that flow exiting the outlet of the axial flow impeller of one stage is directed to the stator of a stage downstream thereof, as taught by Seymour.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686

Art Unit: 3745

F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 2, 6, and 14 (as far as claim 6 is definite and understood) are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable all over claim 9 of copending Application No. 10/702,272. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 9 of the copending application 10/702,272 "anticipates" application claims 1-2, 6, and 14. Accordingly, application claims 1-2, 6, and 14 are not patentably distinct from claim 9 of copending application 10/702,272. Here, claim 9 of copending application 10/702,272 requires plural second lifting elements having an airfoil cross section arranged in a second cascade around the hub, the airfoils in the second cascade having at least one geometric property for controlling the parameter by varying circumferentially or radially or both from element to element, with the second cascade including at least one of a stator with plural stationary blades and a second axial flow impeller having plural impeller blades mounted for rotation on the axis in a direction opposite to the direction of rotation of the first impeller, while claims 1 and 2 of the instant application do not require these features. Thus it is apparent that the more specific claim 9 of copending application 10/702,272 encompasses application claims 1-2, 6, and 14. Following the rationale in *In re Goodman* cited in the preceding paragraph, where applicant has once been granted a patent containing a claim for the specific or narrower invention, applicant may not then

Art Unit: 3745

obtain a second patent with a claim for the generic or broader invention without first submitting an appropriate terminal disclaimer. Note that since copending application claims 1-2, 6, and 14 are anticipated by claim 9 of copending application 10/702,272 and since anticipation is the epitome of obviousness, then application claims 1-2, 6, and 14 are obvious over claim 9 of copending application 10/702,272.

Claim 13, as far as it is definite and understood, is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 9 of copending Application No. 10/702,272 in view of Seymour 3,169,747. Claim 9 of the copending application claims an apparatus substantially as claimed as set forth above, but does not claim that the device includes plural stages, each stage including the first and second cascade, such that the second cascade includes a stator with plural stationary lifting elements arranged around the axis, and such that flow exiting the outlet of the axial flow impeller of one stage is directed to the stator of a stage downstream thereof.

Seymour (figure 1-2) shows a compressor of a gas turbine engine having lifting elements (R1-R6) arranged around a hub 33 capable of rotating on an axis and forming a first cascade in the form of an axial flow impeller, with a second plurality of lifting elements (S1-S6) having an airfoil shaped cross section arranged in a second cascade around the hub, with plural stages, each stage including the first and second cascade, such that the second cascade includes a stator with plural stationary lifting elements arranged around the axis, and such that flow exiting the outlet

Art Unit: 3745

of the axial flow impeller of one stage is directed to the stator of a stage downstream thereof, for the purpose of increasing power.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the apparatus of claim 9 of copending application 10/702,272 such that it includes plural stages, each stage including the first and second cascade, such that the second cascade includes a stator with plural stationary lifting elements arranged around the axis, and such that flow exiting the outlet of the axial flow impeller of one stage is directed to the stator of a stage downstream thereof, as taught by Seymour.

Claims 15-16 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 12 and 13, respectively, of copending Application No. 10,702,272 in view of United Kingdom Patent 2,032,048. Claims 12 and 13 of the copending application 10/702,272 claim a method of controlling the pressure of a fluid flow substantially as claimed, including providing a plurality of lifting elements spaced from each other in an inherent cascade, that provide lift as fluid travels relative thereto, and varying the parameter of the flow relative to each lifting element in repeating cycles to cause the flow relative to each lifting element to begin to separate from the lifting element and then reattach thereto during each cycle, with the parameter being at least one of the magnitude of the velocity of the flow entering the inlet of the cascade, the direction of the velocity of the flow entering the inlet of the cascade, and the swirl in the flow entering the inlet of the cascade.

Art Unit: 3745

However, claims 12 and 13 of the copending application 10/702,272 do not claim each lifting element having an airfoil cross-section and do not claim directing the fluid into an inlet of the cascade.

United Kingdom Patent 2,032,048 (figure 2) shows a method of controlling the pressure of fluid flow, the method comprising the steps of providing a plurality of lifting elements 14, with each lifting element having an airfoil cross-section, and directing the fluid into the inlet of the cascade, with the flow relative to each lifting element being caused to begin to separate from the lifting element and then reattach thereto during each cycle, for the purpose of providing enhanced lift as fluid travels relative to the airfoils.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the method claims 12 and 13 of copending application 10/702,272 such that each lifting element has an airfoil cross-section and such that the fluid is directed into an inlet of the cascade, as taught by United Kingdom Patent 2,032,048.

These are provisional obviousness-type double patenting rejections because the conflicting claims have not in fact been patented.

Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Segota is cited to show airfoils and rotating fan blades in the form of lifting elements that vary a parameter of flow relative to each lifting element in repeating cycles to cause the flow relative to each lifting element to begin to separate from the lifting element and then reattach thereto during each cycle. Segota could also have been applied as it anticipates at least claim 1, but is not applied at this time to avoid multiple rejections.

Requirement for Information Regarding Possible On Sale Activity

An issue of on sale activity has been raised in this application, as set forth in the Information Disclosure Statement filed November 5, 2003. In order for the examiner to properly consider patentability of the claimed invention under 35 U.S.C. 102(b), additional information regarding this issue is required as follows: It is requested that Applicants indicate whether the claimed invention, or any portions of the claimed invention, were made part of the disclosure to the Department of the Navy as the proposal for the contract to perform work by the assignee of the present invention, and in the written reports to the Department of Defense under the contract awarded pursuant to that proposal. The Information Disclosure Statement filed November 5, 2003 indicates that subject matter relating to the present invention was disclosed to the Department of the Navy as the proposal for the contract to perform work, and provided as written reports to the Department of Defense under the contract awarded pursuant to that proposal but does not indicate whether the claimed invention, or any portions of the claimed invention, were made part of the disclosure to the Department of the Navy and the Department of Defense. It is also requested that Applicants indicate whether the proposal for contract work

Art Unit: 3745

and/or written reports included the sale or an offer of sale of the claimed invention or any portion of the claimed invention. It is requested that the relation between the various entities be explained, as set forth in MPEP 2133.03(b)(I)(E), and that the level of completeness of the invention at the time of any sale or offer to sell be explained, as set forth in MPEP 2133.03(c)(I).

Applicant is reminded that failure to fully reply to this requirement for information will result in a holding of abandonment.

Allowable Subject Matter

Claims 3-4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 7-10 and 12 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

No meaningful determination may be made at this time with regard to claims 17-20, due to the indefinite nature of the claims.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (571) 272-4824. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

Art Unit: 3745

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C.V.
September 27, 2005


Christopher Verdier
Primary Examiner
Art Unit 3745